

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) An electronic equipment comprising:
a substrate having an insulating surface;
a semiconductor layer formed over the surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;
a gate insulating film formed over said semiconductor layer;
~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film; and
~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film gate electrode,
wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,
wherein said LDD region entirely overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,
[[and]]
wherein the gate insulating film has a first region having a first thickness ~~in a region~~ where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness ~~in a region~~ where the gate insulating film is not covered by the first conductive film, gate electrode, and the second thickness is thinner than the first thickness, and
wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.
2. (Currently Amended) An electronic equipment comprising:
a substrate having an insulating surface;

a semiconductor layer formed over the surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;

a gate insulating film formed over said semiconductor layer;

~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film; and

~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film gate electrode,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,

wherein said LDD region entirely overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,

wherein said channel forming region overlaps with said second conductive film with said gate insulating film interposed therebetween, [[and]]

wherein the gate insulating film has a first region having a first thickness ~~in a region~~ where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness ~~in a region~~ where the gate insulating film is not covered by the first conductive film, gate electrode; and the second thickness is thinner than the first thickness, and

wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

3. (Currently Amended) An electronic equipment comprising:

a semiconductor layer formed on an insulating surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;

a gate insulating film formed over said semiconductor layer;

~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film, said first conductive film having a tapered shape in cross section at an edge portion; and

~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film, gate electrode,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,

wherein said LDD region entirely overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,

wherein said channel forming region overlaps with said second conductive film with said gate insulating film interposed therebetween, ~~[[and]]~~

wherein the gate insulating film has a first region having a first thickness in a region where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness in a region where the gate insulating film is not covered by the first conductive film, gate electrode, and the second thickness is thinner than the first thickness, and

wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

4. (Previously Presented) The electronic equipment according to claim 1, wherein said LDD region is formed in a self-aligning manner in accordance with the addition of an impurity element into said semiconductor layer with said second conductive film as a mask.

5. (Previously Presented) The electronic equipment according to claim 2, wherein said LDD region is formed in a self-aligning manner in accordance with the addition of an impurity element into said semiconductor layer with said second conductive film as a mask.

6. (Previously Presented) The electronic equipment according to claim 3, wherein said LDD region is formed in a self-aligning manner in accordance with the addition of an impurity element into said semiconductor layer with said second conductive film as a mask.

7. (Previously Presented) The electronic equipment according to claim 4, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

8. (Previously Presented) The electronic equipment according to claim 5, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

9. (Previously Presented) The electronic equipment according to claim 6, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

10. (Canceled)

11. (Currently Amended) An electronic equipment comprising:
a pixel TFT and a driver circuit TFT, each having a semiconductor layer formed on an insulating surface, a gate insulating film formed over said semiconductor layer, ~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film, and ~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film; gate electrode;

wherein said semiconductor layer of said pixel TFT comprises:

a channel forming region overlapping with said second conductive film with said gate insulating film interposed therebetween;

a first LDD region contacting said channel forming region and overlapping with said first conductive film with said gate insulating film interposed therebetween;

a second LDD region contacting said first LDD region;
a source region or a drain region contacting said second LDD region, and
wherein said semiconductor layer of said driver circuit TFT comprises:
a channel forming region overlapping with said second conductive film with said gate insulating film interposed therebetween;
a third LDD region contacting said channel forming region and entirely overlapping with said first conductive film with said gate insulating film interposed therebetween;
a source region or a drain region contacting said third LDD region, and
wherein said first conductive film has a tapered shape in cross section at an edge portion,
and
wherein the width of said first conductive film in the longitudinal direction of the channel forming region is larger than that of said second conductive film.

12. (Canceled)

13. (Previously Presented) The electronic equipment according to claim 11, wherein said first or third LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

14-25. (Canceled)

26. (Previously Presented) The electronic equipment according to claim 1 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

27. (Previously Presented) The electronic equipment according to claim 2 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

28. (Previously Presented) The electronic equipment according to claim 3 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

29. (Canceled)

30. (Previously Presented) The electronic equipment according to claim 11 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

31-35. (Canceled)

36. (Currently Amended) The electronic equipment according to claim 1, further comprising an interlayer insulating film over the first and the second conductive film, ~~gate electrode,~~

wherein the interlayer insulating film comprises an organic insulating material.

37. (Currently Amended) The electronic equipment according to claim 2, further comprising an interlayer insulating film over the first and the second conductive film, ~~gate electrode,~~

wherein the interlayer insulating film comprises an organic insulating material.

38. (Currently Amended) The electronic equipment according to claim 3, further comprising an interlayer insulating film over the first and the second conductive film, gate electrode,

wherein the interlayer insulating film comprises an organic insulating material.

39. (Currently Amended) An electronic equipment comprising:
a substrate having an insulating surface;
a semiconductor layer formed over the surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;
a gate insulating film formed over said semiconductor layer;
~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film; and

~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film, gate electrode,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,

wherein said LDD region overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region, [[and]]

wherein the gate insulating film has a first region having a first thickness in a region where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness in a region where the gate insulating film is not covered by the first conductive film, gate electrode, and the second thickness is thinner than the first thickness, and

wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

40. (Currently Amended) An electronic equipment comprising:
a substrate having an insulating surface;
a semiconductor layer formed over the surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;
a gate insulating film formed over said semiconductor layer;
~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film; and
~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film, gate electrode,
wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,
wherein said LDD region overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,
wherein said channel forming region overlaps with said second conductive film with said gate insulating film interposed therebetween, [[and]]
wherein the gate insulating film has a region first having a first thickness ~~in a region~~ where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness ~~in a region~~ where the gate insulating film is not covered by the first conductive film, gate electrode, and the second thickness is thinner than the first thickness, and
wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

41. (Currently Amended) An electronic equipment comprising:
a semiconductor layer formed on an insulating surface, said semiconductor layer having a channel forming region, an LDD region, a source region and a drain region;
a gate insulating film formed over said semiconductor layer;

~~a first gate electrode comprising~~ a first conductive film formed over said gate insulating film, said first conductive film having a tapered shape in cross section at an edge portion; and
~~a second gate electrode comprising~~ a second conductive film formed over said first conductive film, gate electrode,

wherein the width of said first conductive film in the longitudinal direction of said channel forming region is larger than that of said second conductive film,

wherein said LDD region overlaps with said first conductive film with said gate insulating film interposed therebetween and contacts said source region or said drain region,

wherein said channel forming region overlaps with said second conductive film with said gate insulating film interposed therebetween, [[and]]

wherein the gate insulating film has a first region having a first thickness in a region where the gate insulating film is covered by the first conductive film gate electrode and a second region having a second thickness in a region where the gate insulating film is not covered by the first conductive film, gate electrode, and the second thickness is thinner than the first thickness, and

wherein the gate insulating film has a tapered shape in cross section at a portion between the first region and the second region.

42. (Previously Presented) The electronic equipment according to claim 39, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

43. (Previously Presented) The electronic equipment according to claim 40, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

44. (Previously Presented) The electronic equipment according to claim 41, wherein said LDD region contains a region having a concentration of said impurity element gradient in a range from at least 1×10^{17} to 1×10^{18} atoms/cm³, while increasing as the distance from said channel forming region increasing.

45. (Currently Amended) The electronic equipment according to claim 39, further comprising an interlayer insulating film over the first and the second conductive film, ~~gate electrode~~,

wherein the interlayer insulating film comprises an organic insulating material.

46. (Currently Amended) The electronic equipment according to claim 40, further comprising an interlayer insulating film over the first and the second conductive film, ~~gate electrode~~,

wherein the interlayer insulating film comprises an organic insulating material.

47. (Currently Amended) The electronic equipment according to claim 41, further comprising an interlayer insulating film over the first and the second conductive film, ~~gate electrode~~,

wherein the interlayer insulating film comprises an organic insulating material.

48. (Previously Presented) The electronic equipment according to claim 39 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

49. Previously Presented) The electronic equipment according to claim 40 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a

projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.

50. (Previously Presented) The electronic equipment according to claim 41 wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a game apparatus, a car navigation system, a personal computer and a portable information terminal.